

AMENDMENTS TO THE CLAIMS

1. (Currently Amended) A task switching apparatus for switching execution of a task assigned to a time slot by switching time slots in a processor, comprising:

an assigning unit operable to assign, on a one-to-one basis, each of a plurality of first ~~type~~ tasks to ~~a single first time slot~~ slots among a plurality of time slots within a period, and assign a plurality of second ~~type~~ tasks different from the plurality of first ~~type~~ tasks to a single ~~specified second time slot~~ among the plurality of time slots within the period; and

a time slot switching unit operable to switch time slots when an execution time of a task reaches an assignment time;

a task selecting unit operable to select a first ~~type~~ task from the plurality of first tasks assigned to the first time slot ~~slots~~ when said time slot switching unit switches a current time slot is switched to a time slot other than the ~~specified second time slot~~, and to select ~~a~~ at least one second ~~type~~ task from the plurality of second ~~type~~ tasks assigned to the second time slot when the current time slot is switched to the specified second time slot,

wherein the at least one second task has a priority classification, and said task selecting unit is operable to select the at least one second task from among the plurality of second tasks according to the priority classification.

2. (Canceled)

3. (Currently Amended) The task switching apparatus according to Claim 12,

wherein ~~the said~~ assigning unit is operable to determine ~~determines~~ determine a time of the ~~specified second time slot~~ which is a residual time obtained by subtracting a total time of time slots to which the plurality of first ~~type~~ tasks are assigned from a time of a predetermined period.

4. (Currently Amended) The task switching apparatus according to Claim 3,

wherein ~~the said~~ assigning unit is operable to recalculate ~~recalculates~~ the residual time so as to determine ~~it~~ the residual time as the time of the ~~specified second time slot~~ every time ~~it said assigning unit~~ assigns a new first ~~type~~ task to a time slot.

5. (Currently Amended) The task switching apparatus according to Claim 1,
wherein the first ~~type~~ task is a task ~~with~~ including a specification of an assignment time, and ~~the said~~ assigning unit, when trying to add a new first ~~type~~ task, if in the case where a total sum of total assignment ~~time-times~~ of already-assigned tasks and an assignment time of the new first type task exceeds a time period for a period, refuse refuses to assign a first time slot to the new first ~~type~~ task.
6. (Currently Amended) The task switching apparatus according to Claim 1, further comprising:
a storing unit operable to store lock information ~~showing~~ regarding whether a resource capable of being accessed by a task is in a lock state ~~because of access by any of tasks or not~~; and
a changing unit operable to change a state of a task from an executable state to a waiting state when task under execution is trying to access a resource in a lock state and change a state of the task from a waiting state to an executable state when the resource is unlocked, ~~and~~
wherein ~~the said~~ task selecting unit eliminates a the task in a waiting state from selecting targets.
7. (Currently Amended) The task switching apparatus according to Claim 6, further comprising:
a shifting unit operable to shift the processor to a power-saving state when no executable tasks is included in first ~~type~~ and second ~~type~~ tasks.
8. (Currently Amended) The task switching apparatus according to ~~any of~~ Claim 1 wherein the processor includes at least two register sets ~~for storing~~ operable to store task contexts, further comprising:
a switching unit operable to prepare one of the register sets ~~for using it~~ used for a task under execution, return the context of a task to be ~~completed~~ executed next to another register set using background processing and switch register sets when switching time slots.
9. (Currently Amended) A task switching apparatus for switching tasks to be executed ~~completed~~ in a processor by switching time slots to which a task is assigned, comprising:
a first generating unit operable to assign, on a one-to-one basis, a single first time slot ~~slots in~~

a plurality of time slots within a period to each first type-task among a plurality of first tasks whose assignment time is specified, and generate time slot information including assignment time of each first task corresponding to each of the first time slots;

a second generating unit operable to assign a plurality of second type-tasks, each with a priority classification, to a single second single-specified time slot among the plurality of time slots within the period, and generate a single piece of time slot information including an assignment time and a at least one priority classification of the specified at least one second task assigned to the second time slot;

a time slot switching unit operable to switch time slots when an execution time of a task reaches an assignment time;

a third generating unit operable to generate the task management information including an address of each of tasks assigned to a time slot;

a storing unit operable to store the generated time slot information and task management information being associated in association with each other;

a selecting unit operable to select time slot information stored in the said storing unit at least once in a the period; and

a control unit operable to allow an execution of a task indicating task management information corresponding to the time slot information when time slot information to which a first type-task is assigned is selected, select a task from a plurality of pieces of task management information corresponding to the time slot information according to priorities priority classifications and allow an execution of the task indicated by the selected task management information when time slot information to which a-at least one second type-task is assigned is selected.

10. (Currently Amended) The task switching apparatus according to Claim 9,

wherein the said storing unit stores pieces of task management information of the plurality of second type-tasks as a queue in which the pieces of task management information are is aligned in order of priority classifications order, and

the said control unit selects tasks corresponding to leading task management information of the queue.

11. (Currently Amended) The task switching apparatus according to Claim 10,
wherein ~~the~~ said second generating unit sets a difference between the period and total assignment ~~time~~ times of all first ~~type~~ tasks in ~~the specified~~ the corresponding time slot information as an assignment time of the ~~specified~~ second time slot.
12. (Currently Amended) The task switching apparatus according to Claim 11,
wherein ~~the~~ said second generating unit recalculates the residual time so as to determine an assignment time of the ~~specified~~ second time slot every time said first generating unit assigns a time slot to a new first ~~type~~ time slot.
13. (Currently Amended) The task switching apparatus according to Claim 12 wherein ~~the~~ said storing unit further stores lock information regarding ~~showing~~ whether a resource capable of being accessed by a task is in a lock state ~~because of access by any of tasks~~, the task switching apparatus further comprising:
a queue managing unit operable to dissociate task management information of the task stored in ~~the~~ said storing unit from time slot information when a task under execution attempts ~~is trying~~ to access a resource in a lock state, have ~~the~~ said storing unit store the task management information as a wait queue, and have ~~the~~ said storing unit store task management information in a wait queue associating in association with time slot information when the resource is unlocked.
14. (Currently Amended) The task switching apparatus according to Claim 13 wherein the processor ~~equips~~ includes at least two register sets for storing contexts of tasks, further comprising:
a register set switching unit operable to prepare one of the register sets ~~for using it~~ used for a task under execution, return the context of a task to be executed ~~completed~~ next to another register set using background processing and switch register sets when switching time slots.
15. (Currently Amended) A task switching method for switching execution of a task assigned to a time slot by switching time slots in a processor, including comprising:
an assigning step of assigning, on a one-to-one basis, each of a plurality of first ~~type~~ tasks to a first time slot slots among a plurality of time slots within a period, and assigning a plurality of

~~second type-tasks different from the plurality of first type-tasks to a specified single second time slot among the plurality of time slots within the period; and~~

~~switching time slots when an execution time of a task reaches an assignment time; and~~

~~a task-selecting step of selecting a first task from the plurality of first tasks assigned to the first time slot-slots when the task a current time slot is switched to another time slot except other than the specified second time slot, and selecting a at least one second task from a the plurality of second type-tasks assigned to the second time slot when the task current time slot is switched to the specified second time slot,~~

~~wherein the at least one second task has a priority classification, and the at least one second task is selected from among the plurality of second tasks according to the priority classification.~~

16. (Currently Amended) A ~~program-computer-readable recording medium for causing a computer to perform a method~~ for switching execution of a task assigned to a time slot by switching time slots in a processor, the ~~method comprising~~~~program-causing the processor to execute:~~

~~an assigning step of assigning, on a one-to-one basis, each of the plurality of first type-tasks to a first time slot-slots among a plurality of time slots within a period, and assigning a plurality of second type-tasks different from the plurality of first type-tasks to a specified single second time slot among the plurality of time slots within the period; and~~

~~switching time slots when an execution time of a task reaches an assignment time; and~~

~~a task-selecting step of selecting a first task from the plurality of first tasks assigned to the first time slot slots when an after-switching time slot is not the specified second time slot and selecting a at least one second task from the plurality of second type-tasks assigned to the second time slot so as to execute the task when the after-switching time slot is the specified second time slot,~~

~~wherein the at least one second task has a priority classification, and the at least one second task is selected from among the plurality of second tasks according to the priority classification.~~